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A RECLAMATION PLAN
FOR
BEACON PIT MINE
BATTLE MOUNTAIN,
NEVADA

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CHAPTER 1

DEMONSTRATION RECLAMATION PLAN

BACKGROUND

The Director of the Bureau of Land Management (BLM) committed Nevada to lead an effort to develop a Demonstration Reclamation Plan applying the proposed December 6, 1976 Regulations for Surface Management of Public Land Under U.S. Mining Laws. The commitment evolved from a public hearing in Elko, Nevada, in 1976 when a representative of Citizens for Mining asked if BLM would prepare a study on an inactive mine in Lander County to demonstrate the amount and cost of reclamation envisioned by the regulations.

The BLM agreed to the proposal, and an interdisciplinary team conducted a study and developed this report. The study and report were prepared at Battle Mountain, Nevada, during the period of May 15-19, 1978. Composition of the team included individuals from the areas of environmental science, earth science, surface rehabilitation, mining law, and biological resources, as well as local mining industry representatives (see Appendix A for team composition).

It was concluded that the draft regulations of September 9, 1977, should be used as the basis for the Demonstration Reclamation Plan, rather than the original proposed regulations of December 6, 1976. The September, 1977 draft regulations include changes resulting from public meetings and a comment period held on the original (December, 1976) proposed regulations.

In accordance with the September, 1977 draft of the proposed surface management regulations, the reclamation portion is included in the Plan of Operations prepared by the operator. The Plan of Operations is preceded by a cultural resources inventory and an inventory of the area for wilderness values. Both inventories are conducted by the BLM. In the area examined by the study team, neither of the above items were completed prior to commencement of mining operations, which occurred in the early 1970's. The team assumed the above items had been completed except for the reclamation portion of the Plan of Operations. The team's task was to determine the amount and cost of reclamation for the mine site under the proposed regulations, and this is what the report considers.

Description of Mine

The Beacon pit is presently an inactive barite mine located about 15 miles southeast of Battle Mountain, Nevada, in the SW $\frac{1}{4}$ of Section 18, Township 31 N. and Range 47 E., M.D.M. (See Figure 1.) Approximately 100,000 tons of barite ore have been mined from a narrow, north-trending pit about 600 feet long, 250 feet wide, and 60 feet deep. About 20,000 tons were also removed from a smaller pit located 60 feet east of the main pit.

The waste rock (Area C) removed from the pit (Area B) was placed to the west of the pit. In addition, Area A east of the pit was prospected by removing the surface material with a bulldozer to expose underlying bedrock. In the course of this exploration, a minor drainage was blocked. A turnaround area (Spot Treatment Area 2) created for maneuvering trucks into the main pit has blocked the major drainage which parallels the access road.

The barite occurs as a replacement deposit in the Slaven Chert of the Devonian age. The ore and enclosing country rock trend northerly and dip moderately to the east. Barite is exposed in the east (high) wall of the main pit and in the sides and bottom of the small pit. For the purpose of this report the team assumed the deposit has been mined out; however, the barite is known to extend to the east and the owners intend to further explore that area by drilling.

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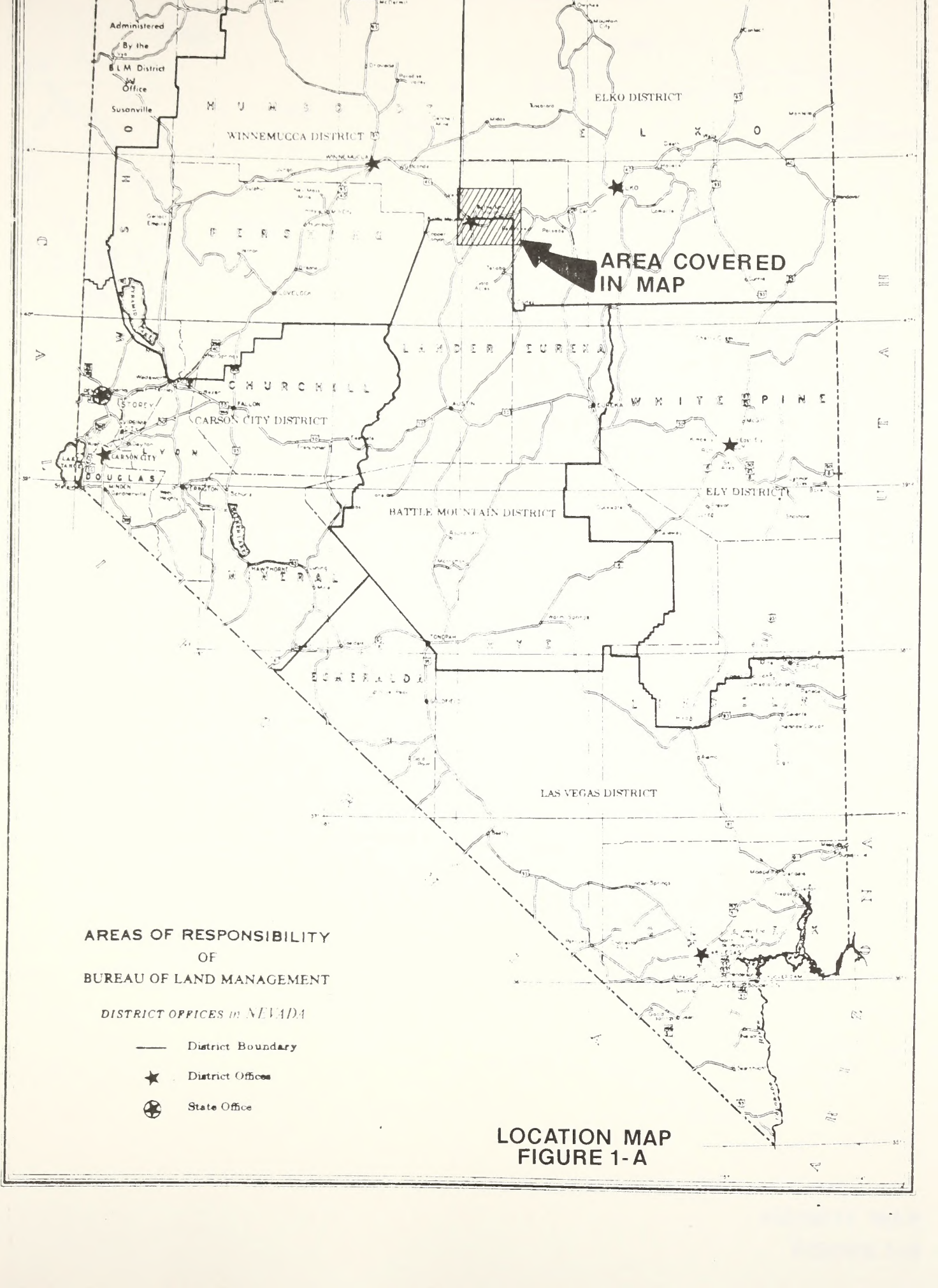
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LOCATION MAP
FIGURE 1-A



R.46E.



VICINITY MAP
FIGURE 1-B

CHAPTER 2

RECLAMATION PLAN

Isolation, Removal, or Control of Toxic Materials

An inspection of the mine site and surrounding area revealed no known toxic materials in the area.

Wilderness Characteristics

The mine site is not located in a roadless area of 5,000 acres or more, and it is not in an area identified by the BLM as a wilderness study area.

Control of Water Runoff and Erosion

Significant intermittent drainages intersect or are marginal to the mine and exploration area (see Figure 2). Surface runoff and erosion control will consist of the following general procedures: (1) opening blocked drainages, and (2) shaping, smoothing, and revegetating disturbed areas. Detailed plans, by area, are discussed in the following sections.

Reshaping and Preliminary Seedbed Preparation

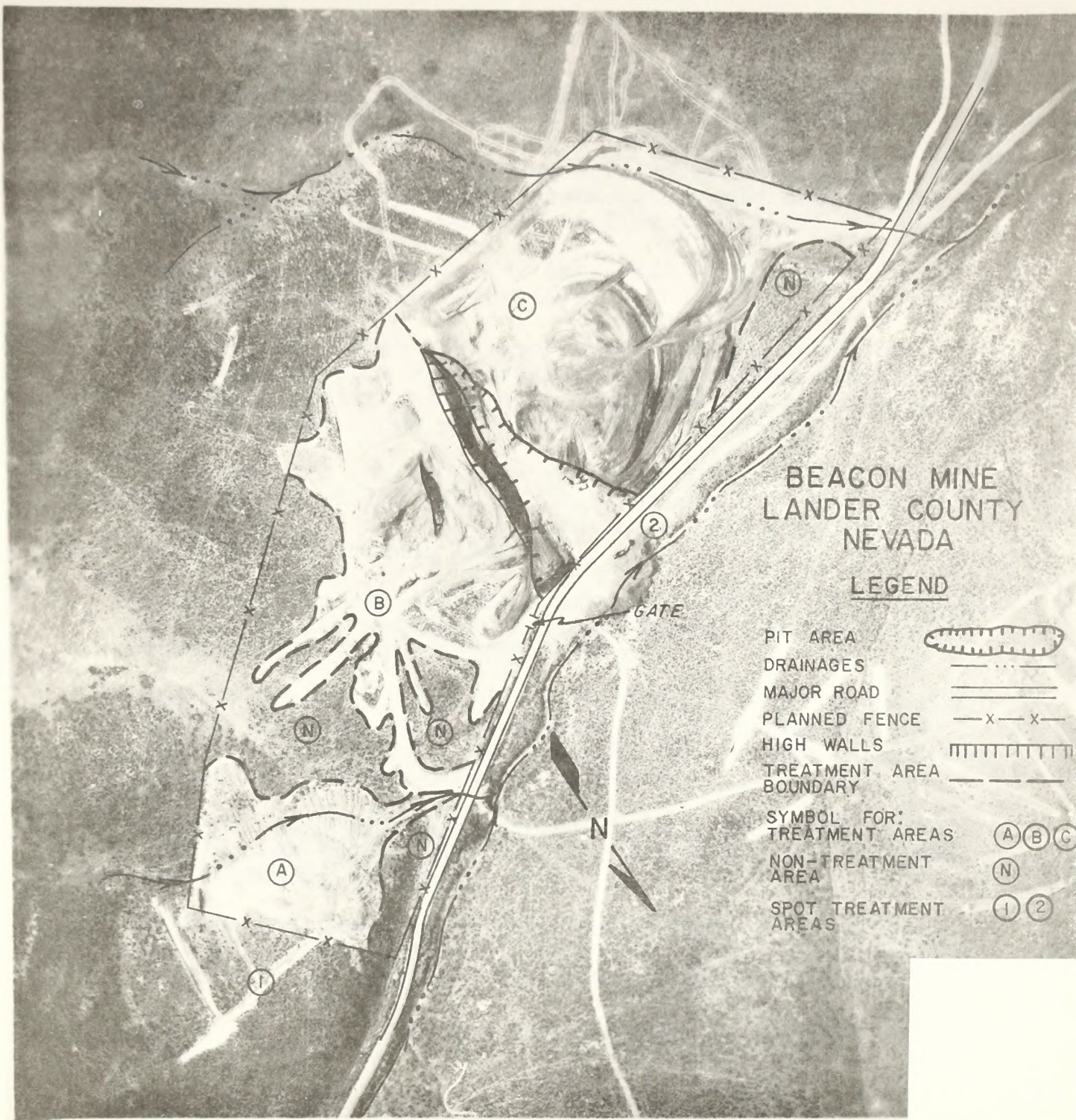
Area A. This exploration site is subdivided into two parts by an east-west stream drainage. Reclamation procedures for the north subpart will consist of the following sequential steps:

Reshape and smooth the disturbed area, filling local depressions and cuts so as to blend the scraped area with the undisturbed margins. Remove an appropriate amount of topsoil and overburden from the east end of the area and along the drainage. Spread the material over the scraped area.

Rip the entire area to bedrock or to a depth of 24 inches whichever is less, with 48 inch spacing.

Shaping the south part of Area A will consist of the following:

Reshape and smooth the disturbed area, filling local depressions or cuts, and blending with the adjoining undisturbed ground.



**PROJECT AREA
FIGURE 2**

Rip the entire area to a depth of 24 inches, with 48 inch spacing.

Area B. Area B includes the scraped bench atop the high wall, various access routes and exploration cuts, the large main pit, and the smaller trench-pit on top.

Reclamation procedures for this area will consist of the following sequential steps:

Reshape and smooth the bench area, filling local depressions or cuts and blending the disturbed ground with adjoining undisturbed areas. Complete the same process for the access road and all exploration cuts.

The high wall and smaller trench-pit will be left intact. Other parts of the main pit will be smoothed and reshaped. The south wall is to be graded to an even slope of not more than 30 percent (18°).

Ripping. Rip all disturbed areas to a depth of 24 inches or to bedrock, whichever is less (except for the smaller trench-pit), with 48 inch spacing.

Topsoil and overburden material stockpiled at the south end of the bench will be spread across the bench area.
- Some topsoil from adjacent undisturbed, sagebrush covered ground may also be used, if necessary.

Area C. This area consists of the mine dump site and some access roads. Reclamation procedures will include the following sequential steps:

Reshape the dump area. Fill local depressions or cuts to produce even contoured slopes of less than 30 percent and blend the dump into the surrounding undisturbed land.

Rip entire dump area and access roads as proposed for Areas A and B.

Spot Treatment Areas.

Site # 1. This site consists of several exploration cuts adjacent to Area A. Shaping and preparation here will consist of smoothing side and end berms.

Site #2. This site is a small drainage blockage at the north end of the main pit. To prevent erosion, this blockage is to be removed and spread as a top dressing in the pit area.

Revegetation and Fencing

The area of disturbed land (Treatment Areas A, B, C and Spot Treatment Areas 1 and 2) is computed to be 20 acres.

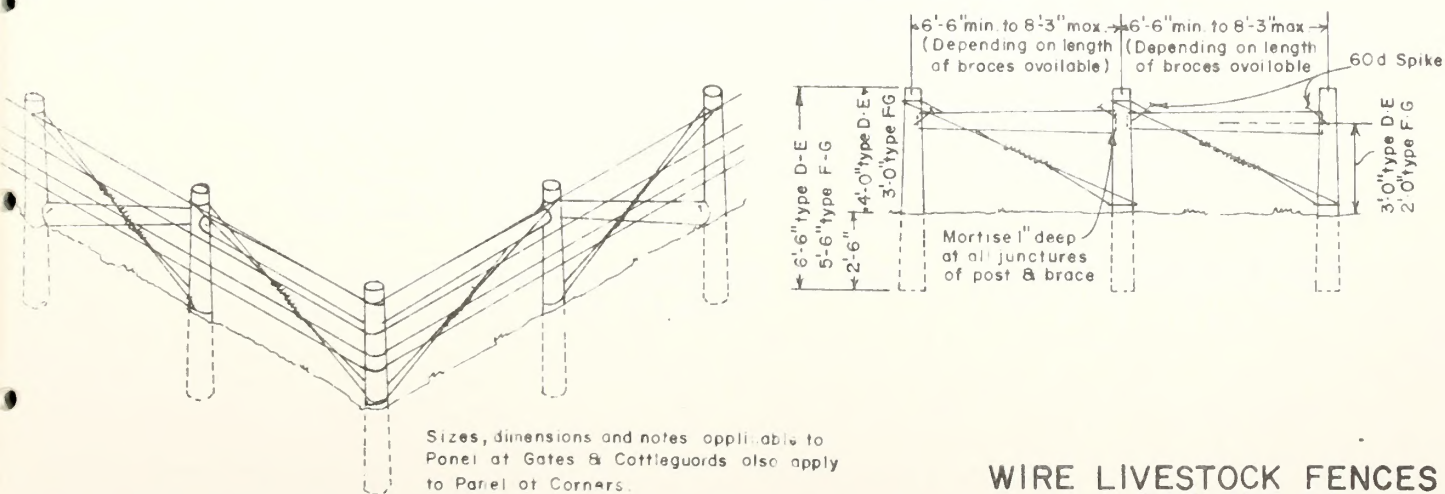
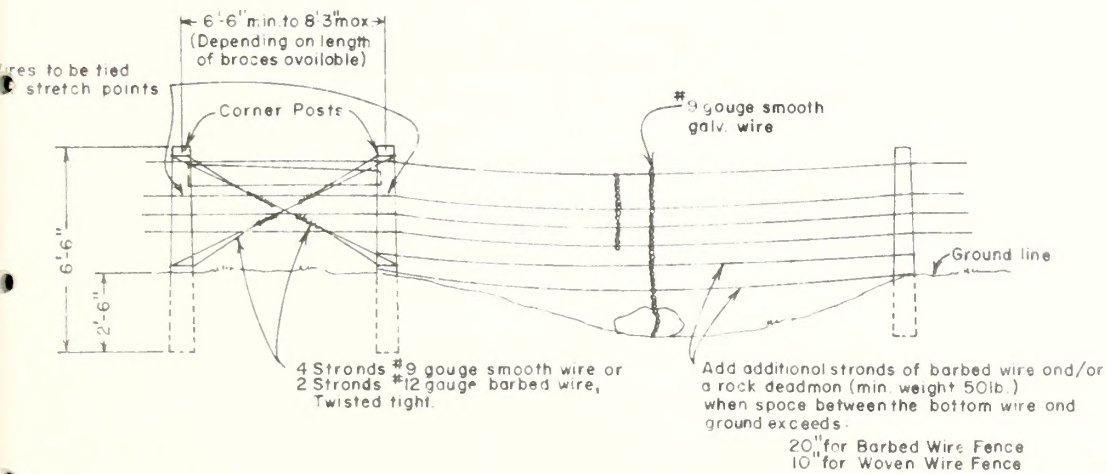
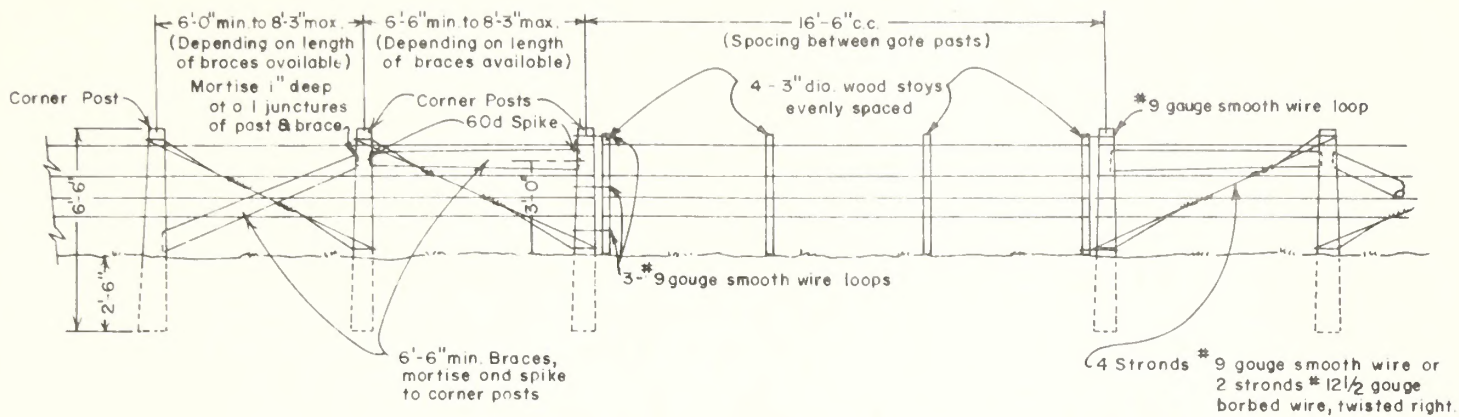
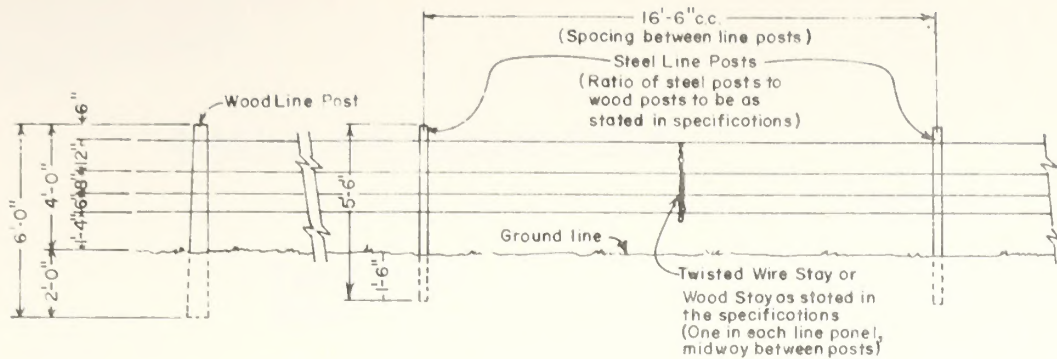
Seedbed Preparation. Two steps are necessary. First, fertilize all areas to be seeded at a rate of 500 pounds per acre of NPK in the ratio of 16-16-16. Use slow release type fertilizer only. Second, harrow all areas to be seeded to a depth of six to eight inches, using a spring tooth harrow.

Seeding. Seed all disturbed areas with the following seed mixture at the ratios indicated, using a Brillion seeder-packer:

	<u>Pounds per acre</u>	<u>Current Cost/lb. (Dollars)</u>	<u>Cost/ acre (Dollars)</u>
Fourwing saltbush	1	4.00	4.00
Crested Wheatgrass, Nordan	5	1.10	5.50
Western wheatgrass	4	2.50	10.00
Pubescent wheatgrass, Luna	4	1.10	4.40
Russian wild rye	2	1.00	2.00
Streambank wheatgrass	2	2.40	4.80
Ladak alfalfa	<u>2</u>	<u>1.70</u>	<u>3.40</u>
Total	20		\$34.10

All work associated with revegetation should be done in late November to ensure optimum success of plant establishment.

Fencing. Approximately one mile of fence with one gate is required for both safety and revegation protection. Construct the fence as shown on Figure 2, according to specifications in Figure 3.



WIRE LIVESTOCK FENCES FOR USE ON ANTELOPE RANGES

FIGURE 3

Seeding and Fencing Costs.

	<u>Dollars</u>
Fertilizer	750 (\$150/ton @ 5 tons)
Seed	682 (\$34.10/acre @ 20 acres)
Harrow	100 (\$5/acre @ 20 acres)
Fertilizer application	100 (\$5/acre @ 20 acres)
Seed application	<u>100 (\$5/acre @ 20 acres)</u>
Subtotal	\$1,732
Fence material	1,000
Fence labor	<u>1,000</u>
Total	\$3,732

Average seeding cost = $\$1,732 \div 20 = \86.60 per acre.

Average fencing cost = $\$2,000 \div 20 = \100.00 per acre

Total seeding and fencing cost \$186.60 per acre

Reclamation Cost Summary

Total estimated reclamation costs for the mining area are summarized below, showing the details of the various costs involved in reclaiming Areas, A, B, and C and Spot Treatment Areas 1 and 2 as shown on Figure 2.

Reclamation Cost Summary

<u>Area</u>	<u>Acreage</u>	<u>Reshaping</u>	<u>Revegetation</u>	<u>Fence</u>	<u>Total Cost</u>
A	3.0	800 a/	259.80		
B	6.1	1,800 b/	526.26	2000	
C	<u>10.9</u>	<u>1,600</u>	<u>943.94</u>	<u> </u>	<u> </u>
	20.0	\$4,200	\$1,730.00	\$2000	\$7,930

Average cost per acre = $7,930 \div 20 = \$396.50$.

a/ Costs for reclamation of Spot Treatment Area 1 are included in this figure.

b/ Costs for reclamation of Spot Treatment Area 2 are included in this figure.

Based on the above costs, a reclamation bond of \$8,000 (\$400 per acre) is recommended for this operation. Cost of reclamation is estimated at \$0.067 per ton of ore, based on an estimated production of 120,000 tons: \$8,000 ÷ 120,000 T = \$0.067/ton.

CHAPTER 3

TEAM FINDINGS AND RECOMMENDATIONS

Reclamation of the Pit and High Wall

Filling of the pits was considered as an optional reclamation program, but was rejected by the team for the following reasons:

1. Some of the material necessary for this purpose might have to be obtained from outside the mined area resulting in additional disturbance of the environment.
2. The company has stated that it plans further exploration and possibly further production at this site.
3. To fill the pit would not materially enhance the visual qualities of the area, nor significantly increase the vegetative resource.
4. The rock exposed in the high wall appears to be stable and to present no serious safety hazard.
5. Geologic evidence useful in further exploration would be covered.

Application of the Regulations

There were two items the team believed should be included in the reclamation portion of the Plan of Operations which are not presently required in the September 1977, proposed surface management regulations. They are:

1. Estimated Costs of Reclamation

The team believes that the operator should provide the estimated costs per acre of his proposed reclamation plan. The estimated costs should be divided into categories such as dirt work, revegetation, and other headings. This information would be necessary to determine the amount of a bond, assuming a bond would be required.

2. Solid Waste Removal

Although this item was not a problem at the mine site, the study examined the removal of solid waste-including abandoned structures (e.g., mine shack), all equipment and discarded manufactured materials (e.g., tires, cans, junk). Solid waste disposal should be in compliance with applicable Federal, State, and local standards. Although solid waste removal is considered under the requirements for environmental protection in the proposed surface management regulations, the reclamation section does not specify the need for removal of abandoned structures, discarded equipment, and junk. The team believes this could be included as an item required in the reclamation portion of the Plan of Operations (Sec. 3809.3-2(h)).

Summary and Recommendations

In summary, the team found much overlap between the items identified which the operator must address in the reclamation portion of the Plan. Duplicative discussion results if each topic (e.g., control of erosion, control of water runoff and reshaping) is addressed separately. The team rejects the topic-by-topic approach where duplication would result in favor of a description of the reclamation program on-the-ground.

The team recommends that paragraph 3809.3(h)(2) of the September 1977, draft regulations on surface management be rewritten as follows:

In preparing the reclamation portion of the Plan of Operations, the operator shall address: (i). Reshaping which shall include consideration of wind and water erosion control, landslide control, rehabilitation of water resources, fisheries and wildlife habitat, and preparation of the area for revegetation; (ii). Isolation, removal, or control of toxic materials; (iii). Revegetation of disturbed areas; (iv). Removal of solid wastes described in 3809.3-2(c) including abandoned buildings and structures and discarded equipment; (v). If the area is identified as a Wilderness Study Area under Section 603 of the Federal Land Policy and Management Act of 1976 or designated by Congress as a Bureau of Land Management Wilderness Area, the operator shall develop mitigation measures to be used to

restore the wilderness and roadlessness characteristics of the area.

Bonding Requirements

The mining industry representatives on the team identified an unresolved issue relating to forfeiture of bond, and whether forfeiture would release a miner's responsibility for reclamation.

They suggest that the regulations should address the following questions. What would the miner's legal responsibility be and what action would the Government take in the event the miner opted to forfeit his bond rather than perform the reclamation operation himself?

Demonstration Mine Site

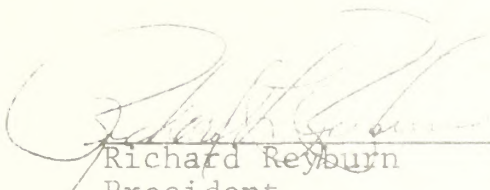
The U.S. Forest Service (USFS) representative on the team offered his time, and expertise and the use of his reclamation equipment to establish a demonstration test plot, no larger than five acres, on an actual mine site in the Battle Mountain District. The mining engineer team member suggested that a site could be furnished in the area to do necessary shaping and site preparation for the test plot. BLM's part would include transportation expenses for USFS equipment from Logan, Utah, to the mine site and return. BLM would provide the seed, fertilizer, fence, and manpower to assist the USFS representative in his demonstration. This would need to be accomplished this fall (1978), but no later than the end of November 1978. It is estimated BLM's total cost for participation would be \$5,000.

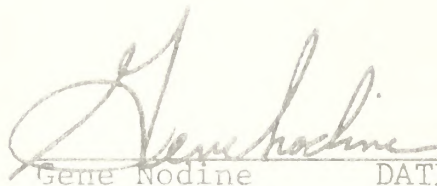
The team recommends the BLM assist in funding the study and authorize the Battle Mountain District Manager to enter into a cooperative agreement with the USFS and the mine owner. The study would provide key information regarding revegetation techniques and costs, which would be essential in designing reclamation plans for small mines in Northern Nevada. It would demonstrate the feasibility of reclamation to the mining industry in Nevada and elsewhere.


The team recommends Washington Office consideration and adoption of this effort, and that FY 79 AWP Directives specifically provide for it.

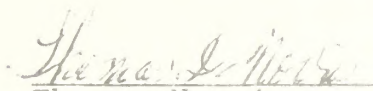
SIGNATURE PAGE

THIS RECLAMATION PLAN AND TEAM RECOMMENDATIONS IS
SUBMITTED ON BEHALF OF THE CITIZENS FOR MINING AND THE
BUREAU OF LAND MANAGEMENT, BATTLE MOUNTAIN DISTRICT
AS A DEMONSTRATION OF IMPLEMENTING RECLAMATION UNDER
THE PROPOSED SURFACE MINING REGULATIONS.

 7/24/78
Richard Reysburn DATE
President
Citizens for Mining

 7/24/78
Gene Nodine DATE
District Manager
Battle Mountain DO

 7/24/78
William R. Allen DATE
Vice President
Citizens for Mining

 7/24/78
Thomas Norris DATE
Director
Citizens for Mining

Citizens for Mining wishes to thank the Bureau of Land
Management for the opportunity to provide in-put into
this study, and appreciates their cooperation in the
interpretation of the proposed reclamation regulations.

However, participation in this study does not consti-
tute an endorsement by Citizens for Mining of the Bureau's
Proposed Surface Mining Regulations.

Appendix A

The ad hoc team consisted of the following:

Fred Boyd	BLM-NV State Office	Mining Engineer
Bill Calkins	BLM-NV State Office	Chief, Env. Coord.
Sheridan Hansen	BLM-Battle Mtn. Dist.	Chief, Div. of Res.
John Riel	BLM-Battle Mtn. Dist.	Range Conserva.
Rod Lentz	BLM-Battle Mtn. Dist.	Geologist
Dave Eddy	BLM-Battle Mtn. Dist.	Geologist
Craig Hall	BLM-Washington Office	Legal Counsel
Don Calhoun	BLM-Denver Ser. Cent.	Rehab. Spec.
Bland Richardson	USFS-Logan, Utah	Research Scient.
Bill Allen	Citizen for Mining	Mining Engineer
Tom Norris	Citizen for Mining	Miner



GENERAL VIEW OF PIT AREA



OVERALL VIEW OF TREATMENT AREA LOOKING NORTH



Taken in Area A, looking approximately north across the drainage area. Majority of top soil is on the south side of drainage. Drainage is blocked near right side of disturbed area.



Taken near spot symbol 1, showing a dozer trench with berms of top soil that have been pushed aside.



Area B on east side of pit area on proposed reclamation site, Area A is seen in the background.



Area B, brush in foreground is outside treatment area, notice topsoil more or less stockpiled.



Standing in Area C looking into pit area.



Taken in Area C, looking north into the pit area, high wall on the right hand side of picture.



Area C looking north, giving an overall view, showing the tailings dump.



Taken from the drainage in Area C, looking southeast toward spoil overburden fill.



Looking east from the pit area, showing the high wall.



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